REMARKS

Entry of this response is proper under 37 CFR §1.116 since there are no new claims or issues. Moreover, the Examiner will want to respond prior to proceeding to Appeal to the arguments below that have not been present previously in the prosecution to date.

Claims 1-6, 8-19, 21-31, and 33-37 are all the claims presently pending in the application.

The amendments, if any, are made only to more particularly point out the invention for the Examiner and not for narrowing the scope of the claims or for any reason related to a statutory requirement for patentability.

Applicants also note that, notwithstanding any claim amendments herein or later during prosecution, Applicants' intent is to encompass equivalents of all claim elements.

Claims 1-6, 8-19, 21-31, and 33-37 stand rejected under 35 U.S.C. §101.

Claims 1-6, 8, 9, 12-19, 21, 22, 25-31, 33, 34, and 37 stand rejected either under 35 U.S.C. § 102(b) as anticipated by "PetroSPIRE: A multi-modal content-based retrieval system for petroleum applications" by Bergman et al., or under 35 U.S.C. §103(a) as unpatentable over the Bergman, further in view of "Comparing Texture Feature Sets for Retrieving Core Images in Petroleum Application" by Li et al. Claims 10, 11, 23, 24, 35, and 36 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Bergman/Li, further in view of "A Framework for Mining Sequence Database at Multiple Abstraction Levels" by Yu.

These rejections are respectfully traversed in the following discussion.

I. THE CLAIMED INVENTION

An exemplary embodiment of the claimed invention, as defined by, for example, independent claim 1, is directed to a method for storing a semantic object derived from geological seismic survey data. The method includes summarizing attributes of the semantic object, indexing the summary of attributes, and storing the summary of attributes and the index of the summary of attributes. The summary of attributes includes one of a slice label, a signal strength, and a coordinate of a surveyed segment.

Conventionally geological seismic survey data has been visualized to assist geologists in

tasks, such as for constructing three dimensional reservoir models. This data may be used to directly create images that may be viewed. These images may be annotated and saved. However, the amount of this seismic survey data is very large and it is very difficult to search and analyze the data in order to identify seismic regions that have geological characteristics which are interesting to geologists. Such enormous amounts of data make it very difficult for a geologist to identify features in the geology that is being visualized.

Additionally, the amount of data that is collected has so far outpaced the ability for conventional systems to store the data.

In stark contrast, the present invention provides a semantic object from geological seismic survey data and then summarizes, indexes, and stores attributes of the semantic object. In this manner, the geological seismic survey data may be analyzed much more efficiently and easily.

II. THE 35 U.S.C. § 101 REJECTIONS

The Examiner continues to allege that claims 1-6, 8-19, 21-31, and 33-37 are directed to non-statutory subject matter because the claims do not require any physical transformation and that the invention as claimed does not produce a useful and tangible result, that claims 14-25 are non-statutory because they do "... not fall within any category of patentable subject matter." The Examiner also considers that claims 26-37 are non-statutory subject matter because they are directed to "software per se", which the Examiner also considers as failing to fall in any category of patentable subject matter.

Applicants respectfully traverse these rejections, as follows.

The Rejection for Claims 1-6, 8-19, 21-31, and 33-37

The test for statutory subject matter is whether the claimed invention as a whole provides a useful, concrete and tangible result. Applicants are not able to decipher the Examiner's rationale for continuing to reject these claims, and it appears to Applicants that every Examiner is evolving their own interpretation of this statutory subject matter test.

Applicants submit that the usefulness of the present invention is clear, since it provides a database storage containing semantic objects derived from geological seismic survey data, as

summarized and indexed. This process is useful for the reasons described at lines 9-12 on page 4, including the usefulness of having raw data summarized and indexed so that semantic objects may be easily searched, retrieved, and analyzed, thereby being much more efficient and easy to use than the conventional systems which simply render a set of "raw" geologic data values into an image. As explained at lines 5-11 of page 5, this approach allows the user to work with the survey data at a higher level of abstraction.

The concreteness of the process is due to the process having been executed on a computer, such that the summarizing of the attributes of the semantic object, the indexing of the summary of attributes, and the storing of the summary of attributes and the index of the summary of attributes will always be executed in the same manner for the same input data.

The process is clearly tangible because even the claims clearly define the real-world application of using data related to geological seismic survey data. However, as explained at lines 3-5 on page 7, the method of the present invention could also be applied in such areas as meteorology, astronomy, and the like. All of these applications are "real-world" applications, so that the present invention is not an abstract idea or a preemption of a mathematical algorithm.

As best understood, this Examiner is confused in attempting to insist that each claim is expected to contain wording that articulates a useful, concrete and tangible result. Applicants submit that this standard is incorrect and that the correct test is whether the claimed invention as a whole provides a tangible, concrete and tangible result. The practical application is clearly described in the specification and Applicants submit that the independent claim wording inherently defines a practical application, since it involves semantic objects from geological seismic survey data.

Moreover, it is submitted that even the independent claims clearly describe a process of transforming input data into data that is summarized and indexed.

The Rejection for Claims 26-37

As best understood, the Examiner considers that these claims are non-statutory because they address "software per se" and this Examiner considers that software is not one of the four categories listed in 35 U.S.C. §101.

In response, Applicants again point out that there is no "software per se" statutory subject

matter test, and the Examiner is respectfully requested to cite a specific case holding if this rejection is maintained for Appeal. The standard for a software processes is the "useful, concrete and tangible" test of whether the claimed invention as a whole is directed to a practical application rather than an abstract idea or the preemption of a mathematical algorithm.

Relative to the Examiner's position that "[s]oftware per se is not a series of steps or acts and thus is not a process", Applicants respectfully disagree. A computer program is understood to mean a series of machine-readable instructions that execute a process on a computer. As such, a computer program clearly does indeed define a "process" and is clearly included as one of the four categories in the statute.

Relative to the specific claims being rejected in this rejection, Applicants respectively disagree that these claims could even be considered as "software per se", since independent claim 26 includes a "database", which is clearly not "software per se." Therefore, if this rejection is to be maintained for Appeal, Applicants request that the Examiner provide an appropriate case holding that defines the terminology "software per se" and that provides an appropriate legal rationale for excluding such systems from statutory subject matter.

It is brought to the Examiner's attention that "system" is just as appropriately construed to mean the hardware aspects of a computerized method and, as such, would also clearly fall within the "machine" category of 35 U.S.C. §101.

Should the Examiner continue to allege that claims 26-37 are non-statutory as being directed to software which is non-patentable per se, Applicants respectfully request that the Examiner specifically support the Examiner's allegations through citations.

Applicants respectfully request withdrawal of this rejection.

III. THE PRIOR ART REJECTIONS

A. The Bergman et al. reference

Regarding the rejection of claims 1-6, 8-9, 12-19, 21-22, 25-31, 33-34, and 37, the Examiner alleges that the Bergman et al. reference teaches the claimed invention. Applicants submit, however, that there are elements of the claimed invention which are neither taught nor suggested by the Bergman et al. reference.

Applicants submit that Bergman fails to satisfy the plain meaning of the claim language of the independent claims relative to a "semantic object." Indeed, Bergman even concedes that the capability of determining semantic objects has *not even been incorporated*, as clearly described at lines 22-25 on page 457: "*Semantic object extraction. Semantic object extraction (as part of data ingest) has not been incorporated into the current scenario. Since the SPIRE framework supports object pre-extraction, however, we will describe this facility here. Incorporating this into the PetroSPIRE application, would be very straightforward, and we anticipate doing so in the near future.*"

Applicants, therefore, submit that, if the capability to extract semantic objects is not even present in Bergman, then this reference clearly fails to suggest the summarization and indexing of semantic objects, as required by the independent claims.

In the rejection, the Examiner relies upon the description at the bottom of page 457 related to "Feature Extraction." However, feature extraction is not equivalent to "semantic object extraction", as clearly evidenced by the description in Bergman itself that feature extraction has been implemented in their system, as described in this final paragraph on page 457, whereas the capability of semantic object extraction has not been incorporated into their system. Therefore, Bergman itself considers feature extraction to be something other than extraction of semantic objects.

Again, Applicants submit that without the capability of semantic object extraction, there can clearly be no summarization and indexing of semantic objects, as required by the independent claims.

The Examiner relies upon secondary reference Li for reasons unrelated to overcoming this fundamental deficiency of Bergman, so that Li does not compensate for this deficiency.

Hence, turning to the clear language of the claims, in Bergman there is no teaching or suggestion of: "A method for storing a semantic object derived from geological seismic survey data, the method comprising: summarizing attributes of said semantic object; indexing the summary of attributes; and storing the summary of attributes and the index of the summary of attributes, wherein said summary of attributes comprises one of a slice label, a signal strength, and a coordinate of a surveyed segment", as required by independent claim 1. The remaining

independent claims have similar wording.

Therefore, the Bergman et al. reference does not teach or suggest each and every element of the claimed invention and the Examiner is respectfully requested to withdraw this rejection of claims 1-9, 12-22, 25-34, and 37.

B. The Bergman et al. reference in view of the Li et al. reference

Regarding the rejection of claims 1-6, 8-9, 12-19, 21-22, 25-31, 33-34, and 37, the Examiner alleges that the Li would have been combined with the Bergman to form the claimed invention. Applicants submit, however, that these references would not have been combined and, even if combined, the combination would not teach or suggest each and every element of the claimed invention, since secondary reference Li fails to overcome the fundamental deficiency identified above that Bergman fails to even incorporate the feature of identifying semantic objects, let alone the capability of summarizing and indexing them.

Therefore, the Examiner is respectfully requested to withdraw the rejection of claims 1-6, 8-9, 12-19, 21-22, 25-31, 33-34, and 37.

C. The rejection based on Bergman/Li , further in view of Yu

Applicants note that, regardless of the propriety of modifying Bergman/Li with secondary reference Yu, the underlying deficiency in Bergman of failing to identify semantic objects, let alone summarizing and indexing them, precludes this combination from meeting the initial burden of a prima facie rejection for these dependent claims.

Therefore, the Examiner is respectfully requested to withdraw the rejection of claims 10-11, 23-24, and 35-36.

IV. FORMAL MATTERS AND CONCLUSION

In view of the foregoing amendments and remarks, Applicants respectfully submit that claims 1-6, 8-19, 21-31, and 33-37, all the claims presently pending in the Application, are patentably distinct over the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue at the earliest possible time.

Should the Examiner find the Application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.

The Commissioner is hereby authorized to charge any deficiency in fees or to credit any overpayment in fees to Attorney's Deposit Account No. 50-0510.

Respectfully Submitted,

Frederick E. Cooperrider
Registration No. 36,769

McGinn Intellectual Property Law Group, PLLC
8321 Old Courthouse Rd., Suite 200
Vienna, Virginia 22182
(703) 761-4100
Customer No. 21254